REMARKS

The Office Action dated November 2, 2005, has been received and carefully noted. The following remarks are submitted as a full and complete response thereto.

Claims 1-37 are currently pending in the application, of which claims 1, 22, 32, 33, and 36 are independent claims. All of claims 1-37 are respectfully submitted for consideration.

Claims 1-3, 15-18, and 34 were rejected under 35 U.S.C. 103(a) as unpatentable over U.S. Patent No. 6,496,476 of Badt et al. ("Badt") in view of U.S. Patent No. 5,953,312 of Crawley et al. ("Crawley"). The Office Action takes the position that Badt teaches all of the elements of the claims except "determining whether a node of at least one alternate node has available capacity to allow information from the failed link to be rerouted," as recited in independent claim 1. The Office Action supplies Crawley to remedy this deficiency of Badt. Applicant respectfully traverses this rejection.

Claim 1, upon which claims 2-21 and 34 depend, is directed to a method for establishing a protection path for a failed link between first and second nodes in a mesh network, wherein a transfer of information from the first node to the second node is disrupted by the failed link. The method includes establishing an alternate path from the second node to the first node via a destination-to-source communication channel, wherein the destination-to-source communication channel is established through at least one alternate node beginning at the second node and ending at the first node. The method also includes determining whether a node of the at least one alternate node has available

capacity to allow information from the failed link to be rerouted. The method further includes executing a switch function at the node of the at least one alternate node traversed by the destination-to-source communication channel to allow source-to-destination information traffic flow from the first node to the second node along the alternate path defined by the destination-to-source communication channel. The method additionally includes switching the information traffic flow at the first node from the failed link to the alternate path when the destination-to-source communication channel is established at the first node.

It is respectfully submitted that the cited references, Badt and Crawley, whether viewed singly or combined, do not disclose or suggest all of the elements of any of the presently pending claims.

Badt is generally directed to a system and method for restricted reuse of intact portions of failed paths. Badt employs messaging techniques to provide information to both origin and destination nodes of a failed path on which spans or links remain intact leading up to the point of failure. This is accomplished by first detecting the failure by the adjacent custodial nodes bracketing the fault. Each of those custodial nodes adjacent to the failure then initiate the propagation of a "reuse" message to either the origin node or the destination node.

Crawley is generally directed to a method and apparatus for determining alternate routes in a network using a connection-oriented protocol. Rather than performing a complete search or exploration of the network for all possible alternate paths, Crawley

performs a limited search for an alternate path from source node to the destination node. The alternate path is selected based on a list of well-interconnected neighboring nodes that are not the ingress node and not an egress node on the normal path. If the attempt fails, a connection refusal signal is sent back to the source node indicating that the Quality of Service (QoS) is not available to the destination node.

The Office Action asserts that it would have been obvious to combine Badt with Crawley to yield the system of Badt further including "determining whether a node of at least one alternate node has available capacity to allow information from the failed link to be rerouted," as recited in independent claim 1. The Office Action's rationale is that Crawley's system requires less time and computational resources than "the normal procedure for identifying alternate paths."

Applicant respectfully submits that the Office Action is mistaken. Crawley does not teach or suggest that the aspect of Crawley in which "the receiving node determines whether the next hop node has adequate resources and capabilities for the requested data flow" contributes to Crawley's alleged advantage of reduced time and computational resources. Rather, as noted above Crawley proposes saving time by first resorting to a node that is outside of the typical path, rather than searching all possible routes.

Indeed, from the viewpoint of one of ordinary skill in the art, the Office Action has provided a rationale for using Crawley by itself – not for combining Badt and Crawley. It is respectfully submitted that there is no teaching, motivation, or suggestion to combine Badt and Crawley because they address the connection problem from

somewhat different ways, and therefore it does not appear that it would be possible to practice both Badt and Crawley simultaneously in the same system. For example, as described above, Badt starts by bracketing the fault and working outward, whereas Crawley begins by trying a previously unused path. Accordingly, Applicant respectfully requests that this rejection be withdrawn.

Claims 36 and 37 were rejected over U.S. Patent No. 6,430,150 of Azuma et al. ("Azuma") in view of Crawley. The Office Action takes the position that Azuma teaches all of the elements of the claims except "determining whether a node of at least one alternate node has capacity to allow information from the failed link to be rerouted," as recited in independent claim 36. The Office Action supplies Crawley to remedy the deficiencies of Azuma. Applicant respectfully traverses this rejection.

Claim 36, upon which claim 37 depends, is directed to a network node including a port configured to receive information from a destination-to-source communication link, and a control circuit that is operably connected to the port and configured to a cross-connect section. The cross-connect section is operably connected to the control circuit and is configured to direct network traffic flow between a first node and a second node. The control circuit is configured such that, upon receipt of the information from a destination-to-source communication link, said information identifying that a protection path for a failed link between the first and the second node is to be established based on available capacity in the protection path. The control circuit causes the cross-connect section to execute a switch function to allow source-to-destination information traffic

flow along a path defined by the information received from destination-to-source communication channel.

Crawley is discussed above. Azuma is generally directed to a method for restoring connection after failure. The method includes, when failure occurs, transmitting information relating to the failure throughout the network. Each node that receives information about the failure determines alternative paths for bypassing the failure using the information relating the failure as well as physical and logical topology information. Then service is switched to the alternative paths.

The Office Action uses essentially the same rationale to combine Azuma and Crawley as it did to combine Badt and Crawley. It is respectfully submitted that the Office Action's rationale is equally flawed here. The Office Action does not present any reason to take the particular aspect of Crawley cited, and plug it into Azuma. The rationale the Office Action presents is a reason to use Crawley's system instead of Azuma's. Accordingly, because of a lack of motivation to combine, it is respectfully requested that this rejection be withdrawn.

Claims 4-14, 19-33, and 35 were rejected under 35 U.S.C. 103(a) as being unpatentable over Badt in view of Crawley and further in view of Azuma. The Office Action takes the position that Badt and Crawley describe all the elements of the claims except "executing a switch function that comprises optically switching the wavelengths of one or more of the optical signals of the failed link onto optical fibers establishing the

alternate path." The Office Action cites Azuma to remedy these deficiencies of Badt and Crawley. Applicant respectfully traverses this rejection.

Claim 22, upon which claims 23-31 depend, is directed to a network protection configuration for use in optical mesh network topologies to reroute optical signals from a failed transmission path to one or more alternate transmission paths. The network protection configuration includes an optical fiber network comprising a plurality of optical network nodes each coupled to transmit and receive optical signals carried on distinct wavelengths on optical fibers of the optical fiber network, the optical network further comprising a source node attempting to transmit the optical signals via the failed transmission path and a destination node detecting the failed transmission path, and a communication channel established from the destination node to the source node to transmit a path failure notification, wherein a route established by the destination-to-source communication channel traversing one or more of the optical network nodes defines the alternate transmission path, and wherein the network nodes defining the alternate transmission path are switched based on available capacity to allow information from the failed transmission path to be rerouted in response to the path failure notification to facilitate source-to-destination transmission of the optical signals from the failed transmission path along the alternate path.

Claim 32 is directed to a network protection configuration for use in optical mesh network topologies to reroute optical signals from a failed transmission path to one or more alternate transmission paths. The network protection configuration includes an

optical fiber network comprising a plurality of optical network nodes each coupled to transmit and receive optical signals carried on distinct wavelengths on optical fibers of the optical fiber network. Each of the plurality of optical network nodes includes a fiber cross-connect circuit coupled to receive one or more of the optical fibers of the optical fiber network and to switch the optical signals on the optical fibers to particular output ports of the fiber cross-connect to route the optical signals on the optical fibers to targeted optical fibers, an optical cross-connect circuit coupled to receive one or more of the optical signals and to switch the optical signals to particular output ports of the optical cross-connect to route the optical signals to targeted ones of the optical fibers, and a destination-to-source communication channel established from a destination node detecting the failed transmission path to a source node to transmit a failed path notification, wherein a route established by the destination-to-source communication channel traversing one or more of the optical network nodes defines the alternate transmission path based on available capacity to allow information from the failed transmission path to be rerouted, and wherein the fiber cross-connect and optical cross-connect circuits of the network nodes defining the alternate transmission path are switched in response to the failed path notification to facilitate source-to-destination transmission of the optical signals from the failed transmission path along the alternate path.

Claim 33, upon which claim 35 depends, is directed to a method for establishing a protection path for a failed optical link between a source node and a destination node in

an optical WDM mesh network, wherein a transfer of optical signals from the source node to the destination node is suspended by the failed optical link. The method includes detecting the failed optical link at the destination node by recognizing the loss of optical power at destination node cross-connect ports, transmitting a link failure signal via a communication channel from the destination node detecting the failed link to the source node through at least one alternate nodes node, determining whether a node of the at least one alternate node has available capacity to allow transmission of the suspended optical signals to be rerouted, configuring a cross-connect switch at each of the alternate nodes receiving the link failure signal, comprising cross-connecting input ports to output ports of the cross-connect switch such that a source-to-destination protection path for transmission of the suspended optical signals is established as the link failure signal is transmitted from the destination node to the source node, and switching the suspended optical signals from the failed optical link to the source-to-destination protection path upon receipt of the link failure signal at the source node, whereby the source-to-destination protection path is set up using a destination-to-source communication channel.

The Office Action again fails to provide a reason to combine the specific desired features of Crawley with either Badt or Azuma. Badt, Crawley, and Azuma each discuss establishing a new network connection, but each has a different, inconsistent approach. It is respectfully submitted that it would not have been obvious to one of ordinary skill in the art to combine Badt, Crawley, and Azuma because a practical combination would be

unworkable, and that there is no particular teaching, motivation, or suggestion to modify Badt by extracting isolated aspects of Crawley and Azuma in order to provide a method which would be within the scope of the present claims. Accordingly, it is respectfully requested that this rejection be withdrawn.

For the reasons explained above, it is respectfully submitted that each of claims 1-37 recites a combination that is neither disclosed nor suggested in the cited art. It is therefore respectfully requested that all of claims 1-37 be allowed, and that this application be passed to issue.

If for any reason the Examiner determines that the application is not now in condition for allowance, it is respectfully requested that the Examiner contact, by telephone, Applicant's undersigned attorney at the indicated telephone number to arrange for an interview to expedite the disposition of this application.

In the event this paper is not being timely filed, Applicant respectfully petitions for an appropriate extension of time. Any fees for such an extension together with any additional fees may be charged to Counsel's Deposit Account 50-2222.

Respectfully submitted,

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